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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

WINKLER, MELISSA A

ART UNIT

PAPER NUMBER

1796

NOTIFICATION DATE

DELIVERY MODE

05/15/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

### Office Action Summary

**Application No.**

10/518,448

**Applicant(s)**

BERNARD ET AL.

**Examiner**

MELISSA WINKLER

**Art Unit**

1796

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 31-47 and 49-67 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 31-47 and 49-67 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SI/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 31, 33, 43, 47, 49, 56, and 65** are rejected under 35 U.S.C. 102(b) as being anticipated by US 3,639,649 to McGrath et al.

**Regarding Claims 31, 43, and 65.** McGrath et al. teach a polyamide composition used to prepare polyamide foams (Column 1, Lines 21 – 22). The composition further comprises crosslinking agents such as bis-isocyanates and an oxy-acid of phosphorus (Column 2, Lines 48 – 55). As the isocyanate compound only serves a crosslinking function, it is submitted that it may reasonably be assumed that the polyamide will be present in an amount substantially greater than the isocyanate compound. The composition also comprises an oxy-acid of phosphorus (Column 2, Lines 14 – 17).

**Regarding Claim 33.** McGrath et al. teach the composition of Claim 31 wherein the polyamide used may be nylon 6 (polyamide 6) or nylon 6:6 (polyamide 6,6) (Column 1, Lines 21 – 31).

**Regarding Claims 47 and 56.** McGrath et al. teach the composition of Claim 31 wherein the polyamide may be obtained by the polycondensation of diamines with dicarboxylic acids or the self condensation of amino acids or lactams (Column 1, Lines 21 – 29).

**Regarding Claim 49.** McGrath et al. teach the composition of Claim 31 may further comprise a surfactant (Column 2, Lines 36 - 37).

**Claims 50 – 54, 57, and 66** are rejected under 35 U.S.C. 102(b) as being anticipated by US 3,639,649 to McGrath et al.

**Regarding Claims 50 – 52, 54, and 66.** McGrath et al. teach a process of preparing polyamide foams (Column 1, Lines 21 – 22). The composition further comprises crosslinking agents such as bis-isocyanates and an oxy-acid of phosphorus (Column 2, Lines 48 – 55). As the isocyanate compound only serves a crosslinking function, it is submitted that it may reasonably be assumed that the polyamide will be present in an amount substantially greater than the isocyanate compound. The composition also comprises an oxy-acid of phosphorus (Column 2, Lines 14 – 17).

In Example 1, the foam is prepared by heating the expandable composition described above to a temperature of 280°C until molten, foaming the composition, and then allowing it to cool. The foam product has a density of 0.14 g/cm<sup>3</sup>.

**Regarding Claim 53.** McGrath et al. teach the composition of Claim 31 may further comprise a surfactant (Column 2, Lines 36 - 37).

**Regarding Claim 57.** McGrath et al. teach the composition of Claim 31 wherein the polyamide may be obtained by the polycondensation of diamines with dicarboxylic acids or the self condensation of amino acids or lactams (Column 1, Lines 21 – 29).

**Claims 55, 58, and 67** are rejected under 35 U.S.C. 102(b) as being anticipated by US 3,639,649 to McGrath et al.

**Regarding Claims 55 and 67.** McGrath et al. teach a polyamide composition used to prepare polyamide foams (Column 1, Lines 21 – 22). The composition further comprises crosslinking agents such as bis-isocyanates and an oxy-acid of phosphorus (Column 2, Lines 48 – 55). As the isocyanate compound only serves a crosslinking function, it is submitted that it may reasonably be assumed that the polyamide will be present in an amount substantially greater than the isocyanate compound. The composition also comprises an oxy-acid of phosphorus (Column 2, Lines 14 – 17).

**Regarding Claim 58.** McGrath et al. teach the composition of Claim 31 wherein the polyamide may be obtained by the polycondensation of diamines with dicarboxylic acids or the self condensation of amino acids or lactams (Column 1, Lines 21 – 29).

**Claims 59 and 62** are rejected under 35 U.S.C. 102(b) as being anticipated by US 3,639,649 to McGrath et al.

**Regarding Claims 59 and 62.** McGrath et al. teach a polyamide composition used to prepare polyamide foams (Column 1, Lines 21 – 22). The polyamide used may be nylon 6 (polyamide 6) or nylon 6:6 (polyamide 6,6) (Column 1, Lines 21 – 31). The composition further comprises crosslinking agents such as bis-isocyanates and an oxy-acid of phosphorus (Column 2, Lines 48 – 55). As the isocyanate compound only serves a crosslinking function, it is submitted that it may reasonably be assumed that the polyamide will be present in an amount substantially greater than the isocyanate compound. The composition also comprises an oxy-acid of phosphorus (Column 2, Lines 14 – 17).

**Claims 60 and 63** are rejected under 35 U.S.C. 102(b) as being anticipated by US 3,639,649 to McGrath et al.

**Regarding Claims 60 and 63.** McGrath et al. teach a process of preparing polyamide foams (Column 1, Lines 21 – 22). The composition further comprises crosslinking agents such as bis-isocyanates and an oxy-acid of phosphorus (Column 2, Lines 48 – 55). As the isocyanate compound only serves a crosslinking function, it is submitted that it may reasonably be assumed that the polyamide will be present in an

amount substantially greater than the isocyanate compound. The composition also comprises an oxy-acid of phosphorus (Column 2, Lines 14 – 17).

In Example 1, the foam is prepared by heating the expandable composition described above comprising nylon 6:6 (polyamide 6, 6) as the polyamide to a temperature of 280°C until molten, foaming the composition, and then allowing it to cool.

**Claims 61 and 64** are rejected under 35 U.S.C. 102(b) as being anticipated by US 3,639,649 to McGrath et al.

**Regarding Claims 61 and 64.** McGrath et al. teach a polyamide composition used to prepare polyamide foams (Column 1, Lines 21 – 22). The polyamide used may be nylon 6 (polyamide 6) or nylon 6:6 (polyamide 6,6) (Column 1, Lines 21 – 31). The composition further comprises crosslinking agents such as bis-isocyanates and an oxy-acid of phosphorus (Column 2, Lines 48 – 55). As the isocyanate compound only serves a crosslinking function, it is submitted that it may reasonably be assumed that the polyamide will be present in an amount substantially greater than the isocyanate compound. The composition also comprises an oxy-acid of phosphorus (Column 2, Lines 14 – 17).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 32 and 34** are rejected under 35 U.S.C. 103(a) as being unpatentable over US 3,639,649 to McGrath et al., as applied to Claim 31 above, and further in view of US 5,760,147 to Schönfeld et al.

**Regarding Claims 32 and 34.** McGrath et al. teach the composition of Claim 31 but are silent regarding the linearity and molecular mass of the polyamide. However, Schönfeld et al. also teach a polyamide foam prepared from a polyamide that is preferably linear and with a molecular weight of 5,000 to 70,000 (Column 1, Lines 22 - 45). McGrath et al. and Schönfeld et al. are analogous art as they are from the same field of endeavor, namely polyamide foam compositions. At the time of invention, it would have been obvious to a person of ordinary skill in the art to use a linear polyamide with a molecular weight in the range taught by Schönfeld et al. in the composition taught by McGrath et al. The motivation would have been that these polyamides are useful preparing foams serving as heat-resistant insulation and high



performance functional components in aircrafts, automobiles, etc. (Column 3, Lines 26 – 33).

**Claims 35 and 37** are rejected under 35 U.S.C. 103(a) as being unpatentable over US 3,639,649 to McGrath et al., as applied to Claim 31 above, and further in view of US 5,959,069 to Glück et al.

**Regarding Claims 35 and 37.** McGrath et al. teach the composition of Claim 31 but do not teach the polyamide is comprised of H-shaped macromolecular chains. However, Glück et al. teach a molding composition comprising H-shaped polyamides (Column 1, Lines 3 – 5). McGrath et al. and Glück et al. are analogous art as they are from the same field of endeavor, namely polyamide compositions. At the time of invention, it would have been obvious to a person of ordinary skill in the art to use an H-shaped polyamide as the polyamide in the composition taught by McGrath et al. The motivation would have been that H-shaped polyamides have very good flowability under conditions of shear melt, as well as good mechanical strength (Glück et al.: Column 2, Lines 10 – 15).

**Claims 36 and 37** are rejected under 35 U.S.C. 103(a) as being unpatentable over US 3,639,649 to McGrath et al., as applied to Claim 31 above, and further in view of WO

99/03909 to Di Silvestro et al. For convenience, citations for WO 99/03909 are taken from the English-language equivalent of this document, US 6,867,256 to Di Silvestro et al.

**Regarding Claims 36 and 37.** McGrath et al. teach the composition of Claim 31 but do not teach the polyamide is a copolyamide with a random arborescent structure. However, Di Silvestro et al. teach a molding composition comprising a polyamide with a random tree-type structure (Column 1, Line 30 – Column 2, Line 50). McGrath et al. and Di Silvestro et al. are analogous art as they are from the same field of endeavor, namely polyamide compositions. At the time of invention, it would have been obvious to a person of ordinary skill in the art to use a copolyamide with a tree-like structure as the polyamide in the composition taught by Di Silvestro et al. The motivation would have been that these copolyamides are easily prepared and have a high melt viscosity (Di Silvestro et al.: Column 1, Lines 24 – 26).

**Claim 38** is rejected under 35 U.S.C. 103(a) as being unpatentable over US 3,639,649 to McGrath et al., as applied to Claim 31 above, and further in view of WO 00/68298 to Bouquerel et al. For convenience, citations for WO 00/68298 are taken from the English-language equivalent of this document, US 6,872,800 to Bouquerel et al.

**Regarding Claim 38.** McGrath et al. teach the composition of Claim 31 but do not teach the polyamide is a hyperbranched copolyamide. However, Bouquerel et al.

teach a composition comprising a hyperbranched copolyamide. Blount and Bouquerel et al. are analogous art as they are from the same field of endeavor, namely polyamide compositions. At the time of invention, it would have been obvious to a person of ordinary skill in the art to use a hyperbranched copolyamide as the polyamide in the composition taught by McGrath et al.. The motivation would have been that the globular structure of hyperbranched polymers gives them a lower viscosity in the molten state than that of linear polymers with the same molecular weight (Bouquerel et al. Column 1, Lines 24 – 29).

**Claims 39 - 41 and 44 - 46** are rejected under 35 U.S.C. 103(a) as being unpatentable over US 3,639,649 to McGrath et al., as applied to Claim 31 above, and further in view of US 5,817,425 to Morishige et al.

**Regarding Claims 39 – 41, 44, and 45.** McGrath et al. teach the composition of Claim 31 but does not expressly teach the isocyanate to be a polyisocyanate or that the isocyanate is protected with a protecting group. However, Morishige et al. teach a polyamide film onto at least one side is applied an adhesiveness-improving layer containing a cross-linking agent that may be a blocked diisocyanate compound (Column 11, Lines 41 – 65). Specifically, the isocyanate may be blocked with  $\epsilon$ -caprolactam (Column 12, Lines 54 – 66). McGrath et al. and Morishige et al. are

analogous art as they are from the same field of endeavor, namely polyamide compositions crosslinked with isocyanates. At the time of invention, it would have been obvious to a person of ordinary skill in the art to crosslink the composition taught by McGrath et al. with an isocyanate crosslinking agent taught by Morishige et al. The motivation would have been that the blocked isocyanate taught by Morishige et al. provides advantages such as promoting cross-linking in the foam (Morishige et al: Column 11, Lines 56 - 66).

**Regarding Claim 46.** McGrath et al. teach the composition of Claim 44 but are silent regarding the deprotection temperature of the isocyanate functions. Consequently, the Office recognizes that all of the claimed effects or physical properties are not positively stated by the reference(s). However, it is submitted that the deprotection temperature of the isocyanate must be suitably less than the softening point of polyamides so that it can effectively crosslink such polymers. It is therefore the Office's position that it may be reasonably expected that a deprotection temperature of the isocyanate functions greater than the melting point or softening point of the polyamide would be achieved by a composition taught by McGrath et al. in view of Morishige et al.

**Claims 39 and 42** rejected under 35 U.S.C. 103(a) as being unpatentable over US 3,639,649 to McGrath et al., as applied to Claim 31 above, and further in view of US 4,444,816 to Richards et al.

**Regarding Claims 39 and 42.** McGrath et al. teach the composition of Claim 21 but do not expressly teach the isocyanate crosslinking agent is an isocyanurate. However, Richards et al. teach crosslinking polyamides with triallyl isocyanurate (Abstract). McGrath et al. and Richards et al. are analogous art as they are from the same field of endeavor, namely crosslinked polyamide compositions. At the time of invention, it would have been obvious to a person of ordinary skill in the art to crosslink the polyamide foam taught by McGrath et al. with triallyl isocyanurate as taught by Richards et al. The motivation would have been that triallyl isocyanurate as a crosslinking agent provides advantages such its highly reactive double bonds and improved heat resistance and mechanical properties in the polymers it crosslinks.

#### ***Response to Arguments***

Applicant's arguments with respect to Claims 31 - 47 and 49 - 67 have been considered but are moot in view of the new ground(s) of rejection.

*Correspondence*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MELISSA WINKLER whose telephone number is (571)270-3305. The examiner can normally be reached on Monday - Friday 7:30AM - 5PM E.S.T..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571)272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Eashoo/  
Supervisory Patent Examiner, Art Unit 1796

MW  
May 8, 2009